CLMPTO

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1. An AM demodulator that receives and demodulates an AM modulated input signal using a wave-detection signal generated by a phase locked loop, said AM demodulator comprising:

a voltage controlled oscillator which outputs a wave-detection signal;

a phase locked loop including

a detection unit which detects whether a detection signal, obtained by AM wave-detection of the wave-detection signal, has a specific relationship with respect to a threshold amplitude level;

a first multiplying unit which raises an AM modulated input signal to a 2n-th power, where n is an integer and at least 1;

a second multiplying unit which raises the wave-detection signal output from said voltage controlled oscillator to the 2n-th power; and

a phase control unit providing phase control using outputs of said first and second multiplying units; and

a switching unit which resets said phase locked loop in response to the detection signal.

2. The AM demodulator according to claim 1, further comprising:

a first phase shift unit which generates, based on the AM modulated input signal, two signals that have a phase difference of 90 degrees; and

a second phase shift unit which generates, based on the wave-detection signal output from said voltage controlled oscillator, two signals that have a phase difference of 90 degrees, wherein said first multiplying unit processes the two signals generated by said first phase shift unit, and said second multiplying unit processes the two signals generated by said second phase shift unit.

3. An AM demodulator that receives and demodulates an AM modulated input signal using a wave-detection signal generated by a phase locked loop, said AM demodulator comprising:

a voltage controlled oscillator which outputs a wave-detection signal;

a detection unit which detects whether a detection signal, obtained by AM wave-detection of the wave-detection signal, has a specific relationship with respect to a threshold amplitude level;

a first multiplying unit which raises an AM modulated input signal to a 2n-th power, where n is an integer and at least 1;

a second multiplying unit which raises the wave-detection signal output from said voltage controlled oscillator to the 2n-th power;

a first phase control unit providing phase control using outputs of said first and second multiplying units;

a second phase control unit providing phase control using the wave-detection signal output from said voltage controlled oscillator;

a filter unit which generates a signal for controlling said voltage controlled oscillator; and

a selection unit which selects a signal output from one of said first phase control unit and said second phase control unit in response to the detection signal and provides the signal selected to said filter unit.

4. The AM demodulator according to claim 3, further comprising:

a first phase shift unit which generates, based on the AM modulated input signal, two signals that have a phase difference of 90 degrees; and

a second phase shift unit which generates, based on the wave-detection signal output from said voltage controlled oscillator, two signals that have a phase difference of 90 degrees, wherein said first multiplying unit processes the two signals generated by said first phase shift unit, and said second multiplying unit processes the two signals generated by said second phase shift unit.

5. An AM demodulator that receives and demodulates an AM modulated input signal using a wave-detection signal generated by a phase locked loop, said AM demodulator comprising:

a voltage controlled oscillator which outputs a wave-detection signal;

a detection unit which detects whether a detection signal, obtained by AM wave-detection of the wave-detection signal, has a specific relationship with respect to a threshold amplitude level;

a first multiplying unit which raises an AM modulated input signal to a 2n-th power, where n is an integer and at least 1;

a second multiplying unit which raises the wave-detection signal output from said voltage controlled oscillator to the 2n-th power;

a first phase control unit providing phase control using outputs of said first and second multiplying units;

a second phase control unit providing phase control using the wave-detection signal output from said voltage controlled oscillator;

a filter unit which generates a signal for controlling said voltage controlled oscillator; and

a switching unit which provides a signal output by said second phase control unit to said filter unit in response to the detection signal.

6. The AM demodulator according to claim 5, further comprising:

a first phase shift unit which generates, based on the AM modulated input signal, two signals that have a phase difference of 90 degrees; and

a second phase shift unit which generates, based on the wave-detection signal output from said voltage controlled oscillator, two signals that have a phase difference of 90 degrees, wherein said first multiplying unit processes the two signals generated by said first phase shift unit, and said second multiplying unit processes the two signals generated by said second phase shift unit.